Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MASAYUKI WAKABE,
JUN-ICHI MIURA,
YASUHARU SAKAI,
TETSUZO KOJIMA,
and TAKAO MAKI

Appeal No. 1997-3624
Application 08/398,522

HEARD: May 1, 2000

Before COHEN, MCQUADE, and BAHR, Administrative Patent Judges.

MCQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Masayuki Wakabe et al. originally took this appeal from the final rejection of claims 1, 3 through 5, 7 through 9, 11 through 14, 16 through 18, 27 and 28. The appellants have since canceled claim 17 and amended claims 11, 16 and 18. Thus, the appeal now involves claims 1, 3 through 5, 7 through

9, 11 through 14, 16, 18, 27 and 28, all of the claims currently pending in the application.

The invention relates to a battery safety device which interrupts current flow within the battery in response to an increase in internal battery pressure. Claim 1 is illustrative and reads as follows:

1. A safety device for a storage battery, comprising:
a charge-discharge lead one end of which is connected to a positive electrode side of said storage battery and the other end of which is connected to a positive terminal of said storage battery;
pressure-sensing means having a concave form which deforms to convex toward an exterior of said storage battery in response to an increase of the pressure in said storage battery, said pressure-sensing means maintaining the deformation without reverting to said concave form; and
cutting means for cutting said charge-discharge lead, said cutting means being pressed by the deformation of said pressure-sensing means to cut said charge-discharge lead, said cutting means being an integral part of said pressure-sensing means.

The references relied upon by the examiner as evidence of obviousness are:

Snowdon 2,204,996 Nov. 23, 1988
(British Patent Document)

Patent Abstracts of Japan, Vol. 18, No. 195 (E-1533), April 5, 1994, relating to Japanese Patent Document 6005273, January 14, 1994.[1]

Claims 1, 3 through 5, 7 through 9, 11 through 14, 16, 18, 27 and 28 stand rejected under 35 U.S.C. § 103 as being unpatentable over the Japanese reference in view of the British reference.[2]

Attention is directed to the appellants' brief (Paper No. 17) and to the examiner's answer (Paper No. 18) for the

[1] The examiner has not made it clear whether it is the abstract itself or the underlying Japanese patent document (to the extent described in the abstract) which is relied upon to support the appealed rejection. This ambiguity is of no practical moment, however, since the appellants have not challenged either as lacking prior art status with respect to the claimed invention, or the accuracy of the abstract in describing the Japanese patent document.

[2] In the final rejection (Paper No. 9), claims 1 and 16 also stood rejected under 35 U.S.C. § 112, second paragraph. Since this rejection was not restated in the examiner's answer (Paper No. 18), we assume it has been withdrawn as a result of the amendments made subsequent to final rejection. See Ex parte Emm, 118 USPQ 180, 181 (Bd. App. 1957).

respective positions of the appellants and the examiner regarding the merits of this rejection.[3]

The Japanese reference discloses a battery comprising a positive electrode terminal 14, a cutting edge 14b projecting from the underside of the terminal, a diaphragm 22, a current breaker 24a and blade-form rings 28 having cutting edges 28a, these elements being arranged as shown in the drawing figure. This structure functions to prevent battery breakage caused by undue increases in internal temperature and/or pressure. As described in the reference,

> when the gas pressure inside the battery rises, the current breaker 24a is denatured to the positive electrode terminal 14 side, its bulb-form outer periphery is pushed against a cutting edge 28a and cut off, and the continuity inside the battery is cut off, so as to remove the cause of the temperature rise. Furthermore, when the internal pressure rises, the diaphragm 22 is also pushed against the cutting edge 14a [sic, 14b] at the positive electrode terminal 14 side to generate a broken hole, so as to let the gas escape to the

[3] The inclusion of now canceled claim 17 in the statement of the rejection on page 3 in the examiner's answer is obviously the result of an inadvertent oversight.

> outer side, and thereby, a breakage of the battery can be prevented.

The foregoing arrangement does not meet the limitations in independent claim 1, or the corresponding limitations in independent claims 16, 27 and 28, requiring the claimed safety device to comprise a charge-discharge lead, a pressure-sensing means and a cutting means which is an integral part of the pressure-sensing means whereby the cutting means is pressed by deformation of the pressure-sensing means to cut the charge-discharge lead. In the Japanese battery, the cutting means (blade-form rings 28 and cutting edges 28a) is not an integral part of the pressure-sensing means (current breaker 24a) and is not pressed by deformation of the pressure-sensing means to cut the charge-discharge lead (also current breaker 24a).

The British reference discloses “a capacitor incorporating a pressure-sensitive cut-out device which responds to an increase of pressure within the capacitor caused by overheating or by gas produced by electrical breakdown” (page 1). The capacitor includes a casing 14 having an upper lid 16 and cover 21, a capacitor element 12

housed within the casing, external terminals 26 and 32 disposed on the lid and operatively connected to respective ends of the capacitor element, a frangible conductor 20 interposed between terminal 26 and the capacitor element, a flexible diaphragm 23 mounted beneath the frangible connector and a lug 27 formed on the diaphragm. In the event of a fault condition within the capacitor element 12, "a build-up of gas pressure causes the diaphragm 23 to bow inwardly of the cover 21, as shown in Figure 2, breaking or shattering the frangible conductor 20 and interrupting the flow of current to the capacitor element 12" (page 4).

In justification of the proposed combination of the Japanese and British references wherein the Japanese battery would be modified to meet the above noted claim limitations, the examiner explains that

> [t]he concept of breaking a current breaker with a pressure sensitive device, wherein the cutter is an integral part of the pressure sensing means is seen in the [British reference]. The [British] reference shows in figure 2, element 23 breaking element 20. The cutter portion, 27, is an integral part of the pressure sensing means.

> Thus, the artisan seeking to create a current breaker apparatus for a battery may be inclined to use cutting means, as both the [Japanese] abstract and the [British] reference show that cutting means work well when responding to an increase in temperature or pressure. Moreover, the prior art teaches that a cutter works when placed above the pressure sensing means or when it is an integral part of the current [sic, pressure] sensing means. Thus, it simply becomes a matter of engineering and design options in selecting the type of cutter useful in a current breaking means. In that, it is known in the art to break the current breaker from the bottom or from the top, hence as long as the current is shut off by braking [sic, breaking] the conductor the cutters are considered equivalent [answer, pages 5 and 6].

Expedients which are equivalent to each other, however, are not necessarily obvious in view of one another. In re Scott, 323 F.2d 1016, 1019, 139 USPQ 297, 299 (CCPA 1963). Hence, that the lead cutting constructions respectively disclosed by the Japanese
and British references might be equivalents is not dispositive of the obviousness issue raised by the proposed reference combination.

Moreover, the mere fact that the prior art may be modified in the manner proposed by an examiner does not make

the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, **1266**, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). In the present case, the references do not suggest, nor has the examiner explained, why the proposed modification of the Japanese battery in view of the British reference would have been desirable. Indeed, the lead cutting constructions respectively disclosed by the references are quite dissimilar, and the proposed modification of the Japanese battery in view of the British reference would involve substantial changes to the battery. In this light, it is evident that the examiner has engaged in an impermissible hindsight reconstruction of the claimed invention using the appellants' claims as a template to selectively piece together the teachings of the prior art.

Accordingly, we shall not sustain the standing 35 U.S.C. § 103 rejection of independent claims 1, 16, 27 and 28, or of dependent claims 3 through 5, 7 through 9, 11 through 14 and 18, as being unpatentable over the Japanese reference in view of the British reference.

The decision of the examiner is reversed.

REVERSED

IRWIN CHARLES COHEN Administrative Patent Judge	)
JOHN P. MCQUADE Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
JENNIFER BAHR Administrative Patent Judge	)

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SUGHRUE, MION, ZINN, MACPEAK & SEAS
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037